National Institute of Environmental Health Sciences

Weather conditions associated with the potential for pollen recirculation in a coastal area

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Abstract:

This study aims to characterise the main synoptic field patterns associated with the potential for recirculation of pollen. A recirculation index (R) was calculated in the area of Mar del Plata, Argentina. The daily development of sea-land breeze and the related monthly frequencies of wind directions were studied. The sea breeze was present for 36.2% of the time, with a mean lifetime of about 2 h in winter and 15-20 h in summer. Recirculation of the air had an annual frequency of around 7%, with a net transport from the city outskirts towards the sea, for 39.4% of the year, and a net inland transport frequency of 38.4%. The Rotated Principal Component Analysis (PCA) was applied to obtain synoptic field patterns associated with potential conditions for recirculation in the area. It was shown that low-pressure systems or troughs between 45 degrees and 60 degrees S (i.e. over the country, the South Pacific and/or the South Atlantic and two anticyclones located in the Atlantic or South Pacific Oceans) are the most common weather conditions associated with air recirculation in the coastal area of Buenos Aires province. A case study with high night pollen concentrations was also analysed. Copyright (c) 2007 Royal Meteorological Society.

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Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Air Pollution, Meteorological Factors

Air Pollution: Allergens

Geographic Feature:

resource focuses on specific type of geography

Ocean/Coastal

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Central/South America

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Health Outcome Unspecified

Resource Type: ☑

format or standard characteristic of resource

Research Article

Timescale: ☑

time period studied

Time Scale Unspecified